10. A method of displaying content to an eye in a target space in a field of view of the eye, the method comprising:

over a first period, projecting visible light to at least one exit pupil formed proximate the eye to form a virtual display in the target space; and

over a second period overlapping with the first period, tracking a gaze position of the eye in the target space, the tracking comprising:

performing a plurality of scans of the eye with infrared light over the second period, each scan comprising (a) generating infrared light signals over a scan period and (b) projecting the infrared light signals from a number M of virtual light projectors to the eye to form the number M of illumination areas on the eye, wherein the number M>1;

detecting reflections of the infrared light signals from the eye for each scan; and

determining the gaze position of the eye in the target space from the detected reflections of the infrared light signals for each scan, wherein determining the gaze position of the eye in the target space from the detected reflections of the infrared light signals for each scan comprises:

identifying a plurality of glints from the detected reflections of the infrared light signals for the scan; and

determining the gaze position relative to the target space based on the identified plurality of glints; and

selectively adjusting the virtual display in the target space based on the gaze position.

11. The method of claim **10**, further comprising determining a trajectory of the gaze position of the eye from the detected reflections of the infrared light signals for each scan.

12. The method of claim **11**, wherein a plurality of exit pupils are formed proximate the eye, and further comprising selectively enabling or disabling the exit pupils to receive a portion of the visible light based on the trajectory of the gaze position.

13. An eye tracking system, comprising:

a scanning light projector including an infrared light source and at least one scan mirror, the scanning light projector to output infrared light signals according to a scan pattern;

an optical splitter having a number M of optical elements, wherein the number M>1, each of the number M of optical elements to receive a subset of the infrared light signals outputted by the scanning light projector and create a virtual light projector for the subset of the infrared light signals;

an optical combiner positioned and oriented to receive each subset of the infrared light signals from the corresponding virtual light projector and redirect the subset of the infrared light signals to a target to form an illumination area on the target, the optical combiner including at least one infrared hologram that is responsive to infrared light and unresponsive to other light; and

an infrared detector positioned and oriented to detect reflections of the infrared light signals from the target;

a processor that is communicatively coupled to the scanning light projector and the infrared detector; and

a non-transitory processor-readable storage medium that is communicatively coupled to the processor, wherein the non-transitory processor-readable storage medium stores data and/or processor-executable instructions that, when executed by the processor, cause the eye tracking system to:

generate infrared light signals by the infrared light source over a scan period;

project the infrared light signals from the number M of virtual light projectors created by the optical splitter to an eye to form the number M of illumination areas on the eye;

detect reflections of the infrared light signals from the eye by the infrared detector for the scan period; and

determine a gaze position of the eye in a target space from the detected reflections of the infrared light signals for the scan period, wherein the gaze position of the eye in the target space is determined from the detected reflections of the infrared light signals for the scan period and comprises:

identifying a plurality of glints from the detected reflections of the infrared light signals for the scan period; and

determining the gaze position relative to the target space based on the identified plurality of glints.

14. The eye tracking system of claim **13**, further comprising a second infrared hologram positioned between the optical splitter and the optical combiner to apply a select optical function to at least a fraction of the infrared light signals outputted by the optical splitter.

15. A method of tracking a gaze position of an eye in a target space in a field of view of the eye over an eye tracking period, the method comprising:

performing a plurality of scans of the eye with infrared light within the eye tracking period, each scan comprising:

generating infrared light signals over a scan period; and

projecting the infrared light signals from a number M of virtual light projectors to the eye to form the number M of illumination areas on the eye, wherein the number M>1;

detecting reflections of the infrared light signals from the eye for each scan; and

determining the gaze position of the eye in the target space from the detected reflections of the infrared light signals for each scan,

wherein determining the gaze position of the eye in the target space from the detected reflections of the infrared light signals for each scan comprises:

identifying a plurality of glints from the detected reflections of the infrared light signals for the scan, each glint associated with one of a plurality of scan subspaces;

determining a glint center position of each glint in a respective scan subspace; and

determining the gaze position relative to the target space based on the glint center positions.

16. The method of claim **15**, wherein determining the gaze position relative to the target space based on the glint center positions comprises:

applying mapping functions to the glint center positions to obtain corresponding intermediate gaze positions in the target space, wherein each of the mapping functions transforms coordinates from one of the scan subspaces to the target space; and

combining the intermediate gaze positions to obtain the gaze position in the target space for the scan.

17. The method of claim **16**, further comprising at a select recalibration time during the eye tracking period, adjusting each of the mapping functions to compensate for drift in the respective scan subspace relative to the target space.